

Amendments to the Claims

Claims 1-11. (Canceled)

Claim 12. (New) A method for cutting freeform surfaces on workpieces by milling, in particular for 5-axis cutting, whereby a workpiece is cut by a tool, i.e., a milling cutter, such that a desired freeform surface is obtained and whereby the tool for cutting is moved along at least one tool path, i.e., cutting path, that is defined on a basis of interpolation points in relation to the workpiece, comprising the steps of:

- a) designing a tool vector in a form of leading angles and setting angles for each interpolation point on the tool path;
- b) determining a normal vector for each interpolation point from the leading angles and the setting angles as well as from a drive vector determined for each interpolation point; and
- c) using the normal vector at each interpolation point on the tool path for a 3D-radius correction for compensating for deviations in dimension of the milling cutter.

Claim 13. (New) The method according to Claim 12, wherein the drive vector at each interpolation point on the tool path is determined by placing a vector through the interpolation point and a neighboring interpolation point.

Claim 14. (New) The method according to Claim 13, wherein the drive vector is determined for a first interpolation point on the tool path by placing a vector through the first interpolation point and a next leading angle interpolation point in a direction of movement.

Claim 15. (New) The method according to Claim 14, wherein for each additional interpolation point on the tool path the drive vector is determined by placing a vector through the interpolation point and a next interpolation point to a rear in the direction of movement.

Claim 16. (New) The method according to Claim 12, wherein the drive vector is determined at each interpolation point on the tool path by placing a spline through all interpolation points on the tool path whereby a first derivation of the spline in an interpolation point corresponds to the drive vector of the corresponding interpolation point.

Claim 17. (New) The method according to Claim 12, wherein for determination of the normal vector for each interpolation point, in a first step, the tool vector of a particular interpolation point is rotated back about a corresponding drive vector by an amount of a corresponding setting angle, yielding a first intermediate vector for the particular interpolation point.

Claim 18. (New) The method according to Claim 17, wherein in a second step, a cross product of the first intermediate vector of the particular interpolation point and the drive vector of the particular interpolation point is formed, the cross product yielding a second intermediate vector for the particular interpolation point.

Claim 19. (New) The method according to Claim 18, wherein in a third step, the first intermediate vector of the particular interpolation point is rotated back about the second intermediate vector of the particular interpolation point by an amount of a corresponding leading angle, yielding the normal vector for the particular interpolation point.

Claim 20. (New) A device for cutting freeform surfaces on workpieces, in particular a 5-axis cutting device, whereby a tool, i.e., a milling cutter, cuts a workpiece such that a desired freeform surface is obtained, having a programming unit for programming at least one tool path, i.e., cutting path, through interpolation points wherein the tool for cutting is movable along the tool path or each tool path in relation to the workpiece, wherein a tool vector in a form of leading angles and setting angles is programmable in the programming unit for each interpolation point, and the programming unit is assigned means to determine a drive vector and a normal vector for each interpolation point, and

wherein the normal vector of each interpolation point is supplied to a 3D-radius correction unit.

Claim 21. (New) The device according to Claim 20, wherein the programming unit is designed for programming the tool path or each tool path as a CAD/CAM system, wherein the CAD/CAM system generates at least one APT file convertible by at least one downstream postprocessor into at least one NC file executable by the cutting device.

Claim 22. (New) The device according to Claim 20, wherein the means that are assigned to the programming unit determine the drive vector and the normal vector for each interpolation point on the tool path from an APT file generated by a CAD/CAM system, wherein the means supply the normal vector in a form of APT data and the APT data is transferred to an APT processor which integrates the APT data into a machine-independent control file such that a 3D-radius correction is executable in an NC machine which includes the 3D-radius correction unit.

Claim 23. (New) A device for cutting freeform surfaces on workpieces, comprising:

- a programming unit for programming a tool path through interpolation points, wherein a tool vector in a form of a leading angle and a setting angle is programmable in the programming unit for each interpolation point;

- a processor for determining a drive vector and a normal vector for each interpolation point, wherein the normal vector is determined from the tool vector and the drive vector; and

- a 3D-radius correction unit, wherein the normal vector of each interpolation point is supplied to the 3D-radius correction unit.

Claim 24. (New) A method for cutting freeform surfaces on workpieces by milling, comprising the steps of:

- a) defining a tool vector in a form of a leading angle and a setting angle for each interpolation point on a tool path for a milling cutter;

- b) determining a drive vector for each interpolation point on the tool path;
- c) determining a normal vector for each interpolation point on the tool path based on the leading angle, the setting angle, and the drive vector determined for each interpolation point; and
- d) performing a 3D-radius correction on the milling cutter based on the normal vector at each interpolation point on the tool path.